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U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

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U.S. APPLICATION NO. (IF KNOWN) SEE 37 CFR
n/a 097800352

INTERNATIONAL APPLICATION NO.

PCT/EP99/00862

INTERNATIONAL FILING DATE

10 February 99

PRIORITY DATE CLAIMED

10 February 98

TITLE OF INVENTION

Multimedia System, Portable Operating Device and Communication Module for Use in Said System

APPLICANT(S) FOR DO/EO/US

NEIFER, Wolfgang

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☐ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

One set of drawings containing four sheets. On filing the international patent appln Fig. 5, sheet 4/4 was inadvertently omitted. Sheet 4/4 was included in the German priority application, Ser. No. 298 02 270.2. Please include as part of the U.S. National Phase.

Post Card

EXPRESS MAIL NO. EL492667641US

Deposited on : July 14, 2000

U.S. APPLICATION NO. IF KNOWN, SEE 37 CFR

097600352

INTERNATIONAL APPLICATION NO.

PCT/EP99/00862

ATTORNEY'S DOCKET NUMBER

3046.052US0

21. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO \$970.00
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$840.00
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$690.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$670.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$96.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$840.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	30 - 20 =	10	x \$18.00	\$180.00
Independent claims	2 - 3 =	0	x \$78.00	\$0.00
Multiple Dependent Claims (check if applicable).				<input type="checkbox"/> \$0.00

TOTAL OF ABOVE CALCULATIONS = \$1,020.00

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). ☐

\$0.00

SUBTOTAL =

\$1,020.00

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00

TOTAL NATIONAL FEE =

\$1,020.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

\$0.00

TOTAL FEES ENCLOSED =

\$1,020.00

Amount to be:
refunded \$
charged \$

☒ A check in the amount of **\$1,020.00** to cover the above fees is enclosed.

☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **13-1030** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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25,695

REGISTRATION NUMBER

DATE

534 Rec'd PCT/PTO 14 JUL 2000
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE

In re Patent Application of)

Wolfgang Neifer)

Serial No.: -----)

Filed: herewith)

For: Multimedia System, Portable Operating)
 Device and Communication Module for)
 Use in Said System)

Group Art Unit:

Examiner:

San Francisco, California

Assistant Commissioner for Patents
 Washington, D.C. 20231

Express Mail No. EL492667641US

Deposited on: July 14, 2000PRELIMINARY AMENDMENT TRANSMITTAL

Sir:

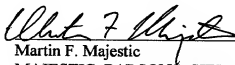
Transmitted herewith is an amendment in the captioned application.

IN THE CLAIMS:

Please delete original Claims 1 - 61. Please substitute the attached new Claims 1 - 30.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. 13-1030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

Dated: July 14, 2000


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Proposed claims for preliminary amendment

Claims

1. A multimedia system comprising a display device, a base station incorporating a receiver for multimedia transmissions and connected to the display device, and a wireless remote control device, the base station having a plurality of Common Interface (CI) PC (Personal Computer) card connectors with associated hardware and software functionality; wherein said system further comprises a communication module in the PC card format incorporating a network client computer and a wireless link to said remote control device for direct control of said network client computer by said remote control device.
2. The multimedia system of claim 1, wherein said remote control device and said communication module comprise encryption and decryption means for encrypted transmission of data at least from said remote control device to said communication module.
3. The multimedia system of claim 1, wherein said communication module incorporates a CAM (Conditionam Access Module) module.
4. The multimedia system of claim 3, wherein said CAM module comprises a chipcard reader.
5. The multimedia system of claim 1, wherein said remote control device incorporates a CAM (Conditionam Access Module) module.
6. The multimedia system of claim 5, wherein said CAM module comprises a chipcard reader.
7. The multimedia system of claim 1, wherein said communication module comprises a modem with an interface for connection to provider network.
8. The multimedia system of claim 7, wherein said modem has an interface for wireless connection to said provider network.

9. The multimedia system of claim 1, wherein said client network computer incorporates a JAVA engine.
10. The multimedia system of claim 1, wherein said remote control device is provided with a fingerprint sensor for user identification.
11. The multimedia system according to claim 1, wherein said remote control device generates control information and outputs it in the form of a control signal, the control information selecting information from display information displayed on the display device.
12. The multimedia system according to claim 1, wherein said remote control device has an input unit for generating pointer position information and selection information as control information, the position of a pointer being able to be set on a screen of the display device by means of the pointer position information in order to position the pointer on a specific display information on the display device, and the position of the pointer being confirmed by means of the selection information.
13. The multimedia system according to claim 12, wherein the input unit of the remote control device has a track ball device for generating the pointer position information.
14. The multimedia system according to claim 12, wherein said remote control device has an enter key for generating the selection information.
15. The multimedia system according to claim 12, wherein the input unit of the remote control device has a cursor key block for generating the pointer position information.
16. The multimedia system according to claim 1, wherein electronic payment functions are implemented on the remote control device.
17. The multimedia system according to claim 16, wherein the electronic payment functions are implemented by means of an exchangeable chip card.
18. The multimedia system according to claim 2, wherein the encrypting means

is embodied on an exchangeable chip card.

19. The multimedia system according to claim 1, wherein the remote control device generates user-defined control signals for controlling the network client computer.

20. The multimedia system according to claim 1, wherein said communication module incorporates a user identification module.

21. The multimedia system according to claim 1, wherein said remote control device incorporates a user identification module.

22. The multimedia system according to claim 1, wherein said base station is a set top box which is connected with a television set.

23. A wireless remote control device for a communication module comprising a CAM (Conditional Access Module) module and encryption means for encrypting control data to be transmitted to said communication module.

24. The control device of claim 23, wherein said CAM module comprises a chipcard reader.

25. The control device of claim 24, wherein said chipcard reader is a plug-in PC card.

26. The control device of claim 23, wherein said encryption means comprise a chipcard reader.

27. The control device of claim 26, wherein said chipcard reader is a plug-in PC card.

28. The control device of claim 23, comprising means for generating pointer position control data.

29. The control device of claim 23, comprising a user identification module.

30. The control device of claim 23, comprising a fingerprint sensor for user identification.

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Multimedia System, Portable Operating Device
and Communication Module for Use in Said System

The present invention relates to a multimedia system and a portable operating device and communication module for use in the multimedia system.

In the "Funkschau" journal, No. 16, 1997, pages 61 to 63, a set top box for digital television (DVB) is described, for use in a multimedia system including a television set, a satellite dish, a telephone connection, etc.. The known set top box has an open interface with a plurality of slots, which is configured in accordance with the Common Interface (CI) standard for digital television (DVB CI standard), which for its part is a substandard of the PC card standard or PCMCIA standard (PCMCIA = Personal Computer Memory Card International Association). CAM modules (CAM = Conditional Access Module) in accordance with the PC card standard may be inserted into the slots as access control modules for digital television with or without Pay-TV or Pay-on-demand. Aside from one or more CAM modules for digital television, for instance a communication module, a module for banking applications, one or more storage modules, etc. may be plugged into further slots of the open interface, as required, which are configured in accordance with the DVB CI standard.

The present invention provides a multimedia system in which the configuration of the base station is independent of the requirements for the operation of the communication module.

The multimedia system in accordance with the invention comprises a receiving device for multimedia transmissions, a display device such as, e.g., a television set, a monitor, a

liquid crystal display or the like, for graphical representation of multimedia contents, a base station such as, e.g., a set top box, including an open interface for interchangeable access control modules, and a communication module which may be connected to this open interface, as well as a portable operating device assigned to this communication module. The base station does not require any separate operating elements for operating the communication module.

Accordingly, the present invention has the decisive advantage that the base station or set top box only provides the open interface for the communication module, whereas the functions thereof are controlled by a portable operating device, for example, by a remote control. Since the control of the functions of the communication module in the multimedia system in accordance with the invention is carried out by means of a separate portable operating device which is assigned to the communication module, and both the portable operating device and the communication module controllable by it are stand-alone components, the configuration of the set top box is completely independent of whether a communication module is used at all, which communication module is used, and how the communication module is controlled or operated. Yet, the display functions of the display device of the multimedia system can be made use of when operating the communication module.

The communication module may include a modem which may be a telephone modem or a data radio modem, for example. The data radio modem preferably operates in accordance with the DECT process or the GSM process.

A communication module having a data radio modem allows a considerably higher data transfer rate than the simple telephone modem function of the standard modems which are usually provided in set top boxes. The data radio thus also permits a

further, fully adequate "forward channel" independent of the television channels, that is, a data transfer with a high data transfer rate from the superordinate network to the particular user. The "backward channel" may continue to be implemented via the standard modem, but may alternatively be provided via the communication module as well.

The communication module may have an access control function, which may be realized by an exchangeable chip card or multimedia card or the like, for example. The communication module is preferably configured as a plug-in type PC card in accordance with the PCMCIA standard.

The communication module in the form of a PC card may for its part be configured in the nature of a CAM module (CAM = Conditional Access Module) for the accommodation and function of a chip card. Owing to the chip card an access control function for access to the data radio function of the communication module, for example, may then be realized.

The communication module may comprise an Internet computer. The term "Internet computer" in this connection includes generally any and all hardware and software components which are necessary for an Internet communication. These include, for instance, a microprocessor having appropriate storage devices, a bus system and a modem having a telephone connection or a radio interface as hardware components. As the most important software components, an operating system including a web browser and/or JAVA engine are to be mentioned here.

The communication module is preferably coupled with the portable operating device of the multimedia system according to the invention in a wireless fashion. This wireless coupling may be implemented by a coupling using infrared radiation, for example. In that case the communication module is provided with

an infrared receiver unit or an infrared transceiver unit. The portable operating device then includes an infrared transmitter or an infrared transceiver unit.

The portable operating device of the multimedia system may have an interface device for accommodation and evaluation of a chip card so as to realize an access control function in the portable operating device.

The portable operating device of the multimedia system of the invention may have an input unit with which pointer information and release information may be generated in a user-defined manner as control information to select specific display information on the display device of the multimedia system. Preferably, the input unit of the portable operating device has a track ball means, a scroll wheel, a cursor block or the like in order to be able to move and position a pointer or cursor on the display device in the fashion of a mouse on the screen displayed. The input unit may furthermore have a key for inputting the confirmation of the selection in the fashion of clicking a button or a double click of a mouse.

The portable operating device may also be an infrared mouse, for example, which is preferably provided with an access control function. Such access control function of the infrared mouse may for its part be realized by a chip card reader and an associated chip card which may simply be inserted into a corresponding accommodation means of the infrared mouse.

The portable operating device or remote control may also be provided with an alphanumeric keypad, so as to be able to input commands and addresses as well as control commands for the communication module in the set top box.

The access control function of the chip card in the portable operating device may be used to set up an additional order and payment function, for which there is no provision in a standard set top box, for instance, but which is additionally required in specific applications. One such application is, for instance, the payment and/or order function, via the Internet, for instance, which may be enabled by means of the access control function of the portable operating device. This additional access control function or enable function may also be set up by an additional second chip card in the communication module. In this case the communication module is provided with appropriate means for realizing these two different access control functions. When the communication module is configured as a plug-in type PC card, it will in this case have an appropriately designed interface for the accommodation and evaluation of two chip cards, that is, a dual card reader.

The portable operating device preferably has an encrypting means so as to be able to encrypt the control information for the communication module in the set top box. The encrypting means may be integrated on the exchangeable chip card which is inserted into the portable operating device.

In this case the communication module has a corresponding decrypting means which decodes the encoded messages or control information transmitted by the portable operating device. The decrypting means may be integrated in the PC card, for example, or may be accommodated on the exchangeable chip card of the PC card if the communication module is configured as a PC card.

Where a bidirectional communication is provided between the portable operating device and the communication module in the set top box, the communication module may have an encrypting device for the messages transmitted to the portable operating device, which in this case has for its part a

decrypting device for the encrypted messages transmitted from the communication module.

The communication module and/or the portable operating device of the multimedia system in accordance with the invention may have a user identification unit, more particularly a SIM module (SIM = Subscriber Identification Module), or may have a SAM module (Subscriber Access Module). In this manner, the communication module may further serve to establish an authorization of connections for banking or electronic commerce via a protected equipment identification, aside from the customer identification. Additionally or as an alternative, the identification may be effected by means of a fingerprint sensor which is arranged on the upper side of the operating device.

Other advantageous further developments of the multimedia system in accordance with the invention will be apparent from dependent claims 2 to 36.

According to claim 37 the portable operating device, more particularly a remote control device, of the invention, for the generation and transmission of control information for the control of a communication module and/or of a display device, in particular a television set having a set top box, comprises an input unit for inputting information, a processing unit, in particular a microprocessor, for processing the information and for generating the control information, a transceiver unit which converts the control information into control signals and transmits the same to the communication module and/or to the display device, and an interchangeable access control module which controls the generation of the control information and/or the transmission of the control signals.

It is possible, for example, with the operating device in accordance with the invention to realize also subsequently an

additional access function, for instance an order and payment function such as, e.g., a banking or electronic commerce function etc. of a multimedia system.

Advantageous further developments of the portable operating device in accordance with the invention will be apparent from dependent claims 38 to 47.

According to claim 48 the communication module of the invention for a set top box has a transceiver unit for, e.g., wireless communication with a radio communications network, a superordinate computer, or a telephone network or the like, for instance, and a unit for coupling the communication module with an operating device assigned to it.

Advantageous further developments of the communication module in accordance with the invention will be apparent from dependent claims 49 to 61.

Further advantages, advantageous further developments and possibilities of application of the present invention will be appreciated from the following description of embodiments of the invention in conjunction with the accompanying drawings in which:

Figure 1 shows an embodiment of the multimedia system of the invention;

Figure 2 shows a diagrammatic representation of a set top box as base station, which may be used in the multimedia system of Figure 1 in accordance with the invention, with a communication module according to the invention and with a conventional CAM module;

Figure 3 shows a perspective view of the communication module of Figures 1 and 2 in accordance with the invention, which is configured as a PC card with a chip card;

Figure 4 shows a perspective view of a further embodiment of the communication module in accordance with the invention, which in this case is configured for a multimedia card; and

Figure 5 shows a perspective view of a third embodiment of the communication module in accordance with the invention, having a telephone plug connector.

In Figure 1 there is shown an embodiment of the multimedia system in accordance with the invention, comprising a portable operating device 40, a set top box 10 as base station, and a television set 50 as display device, the television set having a screen 52.

The set top box 10 has the usual connections, components and interfaces (not shown) as are required for, e.g., satellite reception, cable television, a video cassette recorder etc., and it is configured for the reception and the conversion of digital television signals. The receive section or the receive means of the set top box 10 is provided with a satellite tuner, an MPEG-2-decoder, a demodulator, a demultiplexer, etc., that is, the usual components for receiving digital television. The set top box 10 furthermore has a central control unit 13 which manages and controls all of the data and signal streams in the set top box 10 and which typically comprises a microprocessor including an operating system and further hardware components such as, e.g., a semiconductor storage, a RAM and a ROM, a bus system for data signals, address and control signals, etc.. The set top box 10 further has a CI interface device 12 as an open interface in accordance with the DVB CI standard, a substandard of the PCMCIA standard which is more commonly also referred to

as PC card standard, and is designed for the processing of an MPEG-2-data stream with 70 Mbits/sec. which occurs in the processing of digital television signals in the set top box 10. On the output side the set top box 10 is provided with a usual digital-to-analog converter circuit (not shown) which converts the digital MPEG television signal into an analog television signal, for example an RGB signal or a composite color picture signal, which can be displayed by the television set 50. The set top box 10 also has a standard telephone modem 11 with a telephone connection.

The set top box 10 as shown (cf. Figure 2 as well)) has at least two slots for PC cards in accordance with the DVB CI standard. Inserted in one of the slots is a common CAM module 60 as access control module. The CAM module 60 serves to decode or descramble an encoded digital television signal. For this purpose the CAM module 60 substantially comprises a descrambler 66 having a Conditional Access Processor for descrambling the encoded digital television signal, a CAM control unit 64, for example a microcontroller, for the management and control of the functions of the CAM module 60, a memory 63, for example a flash memory, which has important parameters and data for the descrambling process stored therein, and a smart card interface 61 providing the interface with a smart card 70 which is configured in accordance with the ISO 7816 smart card standard, for example. The encoded digital television signal in the digital MPEG-2-data format can only be descrambled by means of the assigned smart card 70 plugged into the CAM module 60. In addition, the CAM module has a CI interface 62 for setting up the connection of the CAM module 60 with the DVB CI interface device 12 of the set top box 10.

Plugged into the second slot of the set top box 10 is a further PC card which is configured as communication module 20 in accordance with the invention (cf. Figure 3 as well). The

communication module 20 includes a complete data radio modem 24 having a radio antenna 27, a radio frequency transceiver section, a modem control, demodulators and modulators as well as interfaces for further processing. The data radio modem 24 is structured in accordance with the DECT standard or the GSM standard, for instance, and serves for the transmission and reception of radio data in a bidirectional communication. The communication module 20 further comprises an infrared transceiver unit 22 for wireless coupling or communication with a portable operating device 40, and a control unit 28 substantially comprising a microprocessor, a ROM/RAM memory, a bus system for distributing address, data and control signals, and interfaces for providing a connection to the other components of the communication module 20. The control unit 28 has the function of an Internet computer with the aid of which a communication into the Internet or the World Wide Web is set up, controlled and managed. An operating system, browser software, a JAVA engine and modem communication software are installed in the control unit 28 in order for it to be able to fulfill the functions of an Internet computer. A decompressor 21 of the communication module 20 converts the received digital data, which are provided by the data radio modem 24, into decompressed data which are processed further by the control unit 28. Under the control of the control unit 28, a converter 23 converts the image, sound and text data which are received from the Internet via the data radio modem 24 and are accordingly present in the format of the World Wide Web pages, in the HTTP format, or in a computer format, into the digital MPEG television format, which can be processed further by the set top box 10. The communication module 20 further has a CI interface 29, which corresponds to the PCMCIA Type II Extended, for instance, and which connects the communication module 20 with the CI interface device 12 of the set top box 10 and outputs the MPEG data stream from the converter 23 to the CI interface device 12. A chip card interface 26 of the communication module 20

accommodates a chip card or bank card 25 inserted into the communication module 20. The bank card 25 has an access control function for account transactions via the Internet or World Wide Web.

The portable operating device 40 in accordance with the invention comprises an operating unit with an alphanumeric keypad 42, a cursor key block 44, a release key 45, a switch-over key 46 and a track ball 48, a display 49 for displaying, e.g., the current function of the portable operating device 40, an infrared transceiver device for transmitting and receiving infrared signals 41 to and from the communication module 20, and a chip card interface (not shown) for providing a connection with a chip card 47 inserted in the portable operating device 40.

By actuating the track ball 48 the user of the portable operating device 40 may move and position a pointer 56 on the screen 52 of the display device 50 in the nature of a mouse. The release key 45 may be used to confirm a display information on which the pointer 56 has been positioned by means of the track ball 48. The switchover key 46 may be used to change over from an Internet mode of the portable operating device 40 to a television command mode of the portable operating device 40, and vice versa. The alphanumeric keypad 42 may be used to input any desired addresses such as, e.g., for the World Wide Web, as well as control commands and data. An access control for controlling access to an order and payment function is implemented on the chip card 47. The software for the control and display of the pointer 56 is implemented in the control unit 28 of the communication module 20.

The portable operating device 40 has an encrypting means or an encrypting function which encrypts the payment and/or order information, pointer information, release information,

etc. generated by the portable operating device 40 as control information. This encrypting function is performed by the control unit of the portable operating device together with a corresponding encrypting/decrypting software. The encrypted control information is converted by the infrared transceiver unit 43 of the portable operating device 40 into corresponding infrared signals 41, which are in turn received by the infrared transceiver unit 22 of the communication module 20. The control unit 28 decrypts the encrypted control information for the further processing. To this end, a decrypting software is installed in the control unit 28. The other way round, any messages which are to be transmitted from the communication module 20 to the portable operating device 40 are at first encrypted by the control unit 28 of the communication module 20 and transmitted as encrypted messages in an infrared signal from the infrared transceiver unit 22 to the portable operating device 40, where the infrared signals received are converted by the infrared transceiver unit 43 of the portable operating device 40 into encrypted control information, which will then in turn be decrypted again by a corresponding decrypting function which is implemented in the processing device or control unit of the portable operating device 40.

When the user wishes to place an order via the Internet, for example, he will first switch the portable operating device 40 to the Internet mode with the aid of the switchover key 46. In the process, the portable operating device 40 generates an appropriate control information, which is transmitted between the operating device 40 and the communication module 20 via the infrared transfer route and is processed by the control unit 28 of the communication module 20. The control unit 28 of the communication module 20 will thereupon set up a communication link to an Internet provider or to the Internet, making use of its operating system and the Internet software, i.e. the browser, and the data radio modem 24. Using the alphanumeric keypad 42

of the portable operating device 40, the user will then input an Internet address or a World Wide Web address which will again be transmitted from the portable operating device 40 to the communication module 20 and will be accessed there via the browser and via the radio data modem 24. The communication module 20 receives, via the radio data modem 24, the data which is returned by the address or HTTP page accessed and which is converted via the decompressor 21 into a digital, decompressed format which could be displayed on the monitor of a PC. The decompressed data of the homepage received will thereafter be converted by the converter 23 of the communication module 20 from the present personal computer data format into the digital MPEG-2-television data format. The homepage in the digital MPEG-2-television data format will subsequently be output to the DVB CI interface device 12 of the set top box 10 via the CI interface 29 of the communication module 20 under the control of the control unit 28 or the Internet computer. This digital television data signal, which corresponds to the data of the requested homepage, is converted by the central control unit 13 of the set top box 10 by a television signal digital-to-analog converter (not shown) of the set top box 10 into an analog RGB signal which is supplied via a SCART cable to the television set 50 as the display device and is displayed by the latter as World Wide Web page or homepage.

In Figure 1 a plurality of fields of the Web page or homepage displayed on the screen 52 of the display device 50 are illustrated, namely, a payment field 54 and order fields 55. The user will now operate the track ball 48 of the portable operating device 40 and move the pointer 56 on the screen 52 to a particular order field 55, indicating the PRODUCT1, which the user intends to order. Thereafter, he will actuate the release key 45 of the portable operating device 40 to confirm the order. The pointer position information and confirmation information or release information generated in the order process

will again be transferred, via the infrared path, to the communication module 20 where it will be converted by the control unit 28 into a movement of the pointer 56 on the display device 50 by means of the mouse software installed, to the extent that the pointer information is hit. The confirmation information and the pointer information will be supplied by the control unit 28 to the data radio modem 24, which responds by sending signals that correspond to the information back to the address of the homepage accessed. The user will then again actuate the track ball 48 of the portable operating device 40 in order now to move the pointer 56 to the payment field 54 and to position it there. By means of the release key 45 the user will then confirm payment of the product previously ordered. The control information for the order and payment can be produced only when the chip card 47, which includes a payment and order authorization as access control function, is inserted in the portable operating device 40. After the payment information has reached the communication module 20 via the infrared transmission path and has been processed by the control unit 28 of the communication module 20, the control unit 28 will output the confirmation of payment to the homepage address involved via the browser installed and the data radio modem 24.

On the basis of the payment confirmation by the user the control unit 28 or, respectively, the Internet computer will next establish a World Wide Web communication link with the user's bank so as to carry out an Internet payment transaction for payment of the product ordered. For this purpose the control unit 28 of the communication module 20 will set up a link with the website or homepage of the user's bank. The Internet transaction is made possible by the bank card 25 being inserted in the communication module 20 and which includes appropriate transaction authorizations as access function.

On the other hand, when the user wishes to control the digital television on the display device 50, for instance the program selection, he will actuate the switchover key 46 on the operating unit of the portable operating device 40 and switch it over to the television mode. This switchover action is communicated to the control unit 28 of the communication module 20 via the infrared path by means of appropriate control information; the control unit 28 will then supply all incoming control information as television control commands to the set top box 10 via the CI interface 29 and the CI interface device 12, for the control of the television function.

Figure 3 illustrates the communication module 20 used in the multimedia system according to Figures 1 and 2 together with the bank card 25. Optionally, the communication module 20 may have a SAM module 30 to support a protected equipment identification, in particular for banking or electronic commerce.

Figure 4 shows a further embodiment of the communication module in accordance with the invention. The communication module 81 is likewise designed as a plug-in type PC card and is adapted to accommodate a multimedia card 80. It is likewise provided with an infrared interface 85 and a data radio modem interface the same as the communication module 20 of Figure 3.

In Figure 5 there is illustrated a third embodiment of the communication module in accordance with the invention. The communication module 83 as shown is equipped with an ISDN-based telephone modem and has a telephone plug connector 84 for a telephone cable to be plugged in. The communication module 83 further has an infrared interface 85, which has been discussed in detail above with reference to the communication module 20 of Figures 1 to 3. A chip card 86 including an access control function may be inserted into the communication module 83.

The multimedia system may be operated simultaneously with two activated access control modules which are controlled by the portable operating device. A first access control module is a CAS module and a second module is an Internet computer which may support the overlay of the browser information over the television video data (television picture) of the CAS module. The two data streams, the video data and the Internet data, may interact and thus generate individual shopping scenarios or even classes of scenarios (e.g., a loyalty scenario, a premium user scenario, interactive game scenarios). The Internet and TV data streams are correlated in terms of time, the individual component being in each case dictated by the individual Internet access, the user profile. The Internet channel is the forward and backward channels at the same time.

1998-1999

Claims

1. A multimedia system comprising a receiving device for multimedia transmissions, a display device for graphical representation of multimedia contents, a base station including an open interface for interchangeable access control modules, and a communication module (20; 81; 83) which may be connected to the open interface, characterized by a portable operating device (40) assigned to the communication module (20; 81; 83).
2. The multimedia system according to claim 1, characterized in that the communication module (20; 81; 83) includes a modem.
3. The multimedia system according to claim 2, characterized in that the communication module (20; 81) is provided with a wireless transceiver interface.
4. The multimedia system according to any of the preceding claims, characterized in that the communication module (20; 81; 83) is coupled with the portable operating device (40) via a wireless connection.
5. The multimedia system according to any of the preceding claims, characterized in that an access control function is integrated in the communication module (20; 81; 83).
6. The multimedia system according to any of the preceding claims, characterized in that an access control function is integrated in the portable operating device (40).

7. The multimedia system according to claims 5 and 6, characterized in that the access control function is implemented by means of an exchangeable chip card (47).

8. The multimedia system according to any of the preceding claims, characterized in that the portable operating device (40) generates control information and outputs it in the form of a control signal, the control information selecting information from display information displayed on the display device.

9. The multimedia system according to claim 8, characterized in that the access control function of the portable operating device (40) controls the generation of the control information and/or the output of the control signal to the base station.

10. The multimedia system according to claim 8 or 9, characterized in that the control signals output by the portable operating device (40) are infrared signals (41).

11. The multimedia system according to any of claims 8 to 10, characterized in that the portable operating device (40) has an input unit for generating pointer position information and release information as control information, the position of a pointer (56) being able to be set on a screen (52) of the display device by means of the pointer position information in order to position the pointer (56) on a specific display information on the display device, and the position of the pointer (56) being confirmed by means of the release information.

12. The multimedia system according to claim 11, characterized in that the access control function of the portable operating device (40) controls the generation of the pointer position information and/or the release information.

13. The multimedia system according to claim 11 or 12, characterized in that the input unit of the portable operating device (40) has a track ball device (48) for generating the pointer position information.

14. The multimedia system according to any of claims 11 to 13, characterized in that the input unit of the portable operating device has a release key (45) for generating the release information.

15. The multimedia system according to any of claims 11 to 14, characterized in that the input unit of the portable operating device (40) has a cursor key block (44) for generating the pointer position information.

16. The multimedia system according to any of the preceding claims, characterized in that payment and/or order authorization functions are implemented on the portable operating device (40).

17. The multimedia system according to claim 16, characterized in that the payment and/or order authorization functions of the portable operating device (40) are implemented by means of an exchangeable chip card (47).

18. The multimedia system according to any of claims 8 to 17, characterized in that the portable operating device (40) has an encrypting means for encoding the control information.

19. The multimedia system, characterized in that the encoding means is integrated on an exchangeable chip card (47).

20. The multimedia system according to claim 18 or claim 19, characterized in that the communication module (20) has a

decrypting means for decoding the encoded control information received from the portable operating device (40).

21. The multimedia system according to any of the preceding claims, characterized in that the interchangeable access control modules of the base station are CAS modules.

22. The multimedia system according to claim 21, characterized in that the CAS modules are plug-in type PC cards.

23. The multimedia system according to claim 21 or claim 22, characterized in that the CAS modules and the open interface of the base station are configured in accordance with a PC standard, in particular in accordance with the DVB CI standard.

24. The multimedia system according to claim 22 or 23, characterized in that the PC card is designed to accommodate a chip card, in particular a smart card (70), and that the PC card includes a chip card reader.

25. The multimedia system according to any of the preceding claims, characterized in that the communication module (20) comprises an Internet computer.

26. The multimedia system according to claim 25, characterized in that the portable operating device (40) generates user-defined control signals for controlling the Internet computer.

27. The multimedia system according to claim 25 or claim 24, characterized in that the display device represents Internet pages under the control of the Internet computer.

28. The multimedia system according to any of claims 25 to 27, characterized in that upon an appropriate command from the portable operating device (40) the Internet computer establishes

via a modem a communication link with the Internet or World Wide Web.

29. The multimedia system according to any of the preceding claims, characterized in that the communication module (20) and/or the portable operating device has a user identification unit, in particular a SIM or SAM module.

30. The multimedia system according to any of the preceding claims, characterized in that the communication module (20; 81) is provided with a radio receiver/transmitter unit operating in accordance with a wireless transmission process, in particular the DECT process or the GSM process.

31. The multimedia system according to any of the preceding claims, characterized in that the communication module (20) has an infrared transceiver unit (22).

32. The multimedia system according to any of the preceding claims, characterized in that the communication module is configured in the form of a plug-in type PC card.

33. The multimedia system according to any of the preceding claims, characterized in that the communication module (20; 81; 83) and the open interface of the base station are configured in accordance with a PC standard, in particular in accordance with the DVB CI standard.

34. The multimedia system according to either of claims 32 or 33, characterized in that the PC card is configured to accommodate a chip card (47; 86), in particular a smart card (70), and that the PC card includes a chip card reader.

35. The multimedia system according to any of the preceding claims, characterized in that the base station is a set top box

(10) which is connected with a television set (50) as display device.

36. The multimedia system according to claim 35, characterized in that the base station or set top box (10) is integrated in the television set (50).

37. A portable operating device (40), in particular a remote control device, for the generation and transmission of control information for the control of a communication module (20; 81; 83) and/or of a display device, in particular a television set (50) having a set top box (10), comprising
an input unit for inputting information,
a processing unit for processing the information and for generating the control information,
a transceiver unit which converts the control information into control signals and transmits the same to the communication module (20; 81; 83) and/or to the display device, and
an interchangeable access control module which controls the generation of the control information and/or the transmission of the control signals.

38. The portable operating device according to claim 37, characterized in that it has a chip card reader and that the access control module is a plug-in type chip card (47).

39. The portable operating device according to claim 37 or claim 38, characterized in that the transceiver unit is an infrared transceiver unit which generates infrared signals (41) as control signals.

40. The portable operating device according to any of claims 37 to 39, characterized in that the input unit has a means, in particular a track ball (48), for generating pointer position information and a means, in particular a release key (45), for

generating release information as control information, the position of a pointer (56) being able to be set on a screen (52) of the display device in dependence on the pointer position information in order to position the pointer (56) on a specific display information, and the position of the pointer (56) being confirmed in the nature of a mouse click in dependence on the release information.

41. The portable operating device according to claim 40, characterized in that the access control module controls the generation of the pointer position information and/or the release information.

42. The portable operating device according to claim 40, characterized in that the access control module enables the transmission of the pointer position information and/or the release information as control signals.

43. The portable operating device according to any of claims 37 to 42, characterized in that payment and/or order authorization information is stored on the access control module.

44. The portable operating device according to any of claims 37 to 43, characterized in that an encoding means is provided for encoding the control information.

45. The portable operating device according to any of claims 37 to 44, characterized by an interface device for a user identification unit, in particular a SIM or SAM module.

46. The portable operating device according to any of claims 37 to 45, characterized in that a switchover key (46) is provided with which the control of a television function or an Internet function may be selected.

47. The portable operating device according to any of claims 37 to 46, characterized in that a fingerprint sensor is arranged at the surface of the operating device.

48. A communication module for a set top box (10), comprising a transceiver unit for communication and comprising a unit for coupling with a portable operating device (40).

49. The communication module according to claim 48, characterized by an Internet computer.

50. The communication module according to claim 48 or 49, characterized by an interface for a user identification unit, in particular a SIM or SAM module (30).

51. The communication module according to any of claims 48 to 50, characterized in that the transceiver unit is a radio receiver/transmitter unit which operates in accordance with a wireless transmission process, in particular the DECT process or the GSM process.

52. The communication module according to any of claims 48 to 51, characterized by a modem, in particular a data radio modem (24).

53. The communication module according to claim 52, characterized in that the modem is an ISDN modem.

54. The communication module according to claim 52 or claim 53, characterized by a telephone plug connector (84).

55. The communication module according to any of claims 48 to 54, characterized in that the unit for coupling with the portable operating device (40) is an infrared transceiver unit.

56. The communication module according to any of claims 48 to 55, characterized in that it is configured in the form of a PC card.

57. The communication module according to claim 56, characterized in that the PC card is configured in accordance with the DVB CI standard.

58. The communication module according to claim 56 or claim 57, characterized in that the PC card has an interface (26) for a chip card.

59. The communication module according to claim 58, characterized in that the PC card has an interface device for a plurality of chip cards.

60. The communication module according to any of claims 48 to 59, characterized by a converter (23) which converts computer image data into television picture data.

61. The communication module according to any of claims 48 to 60, characterized in that a decompressor (21) is provided which decompresses the data received by the transceiver unit.

Abstract

A multimedia system comprises a receiving device for multimedia transmissions, a display device for graphical representation of multimedia contents, a base station including an open interface for interchangeable access control modules, and a communication module (20) which may be connected to the open interface. The multimedia system further has a portable operating device (40) assigned to the communication module (20).

Figure 1

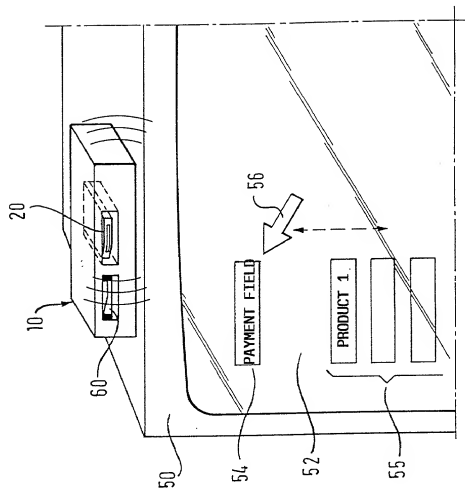


Fig. 1

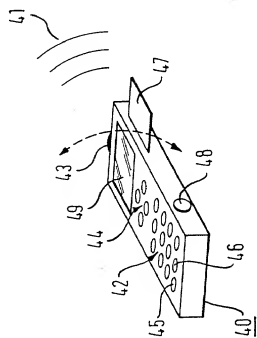
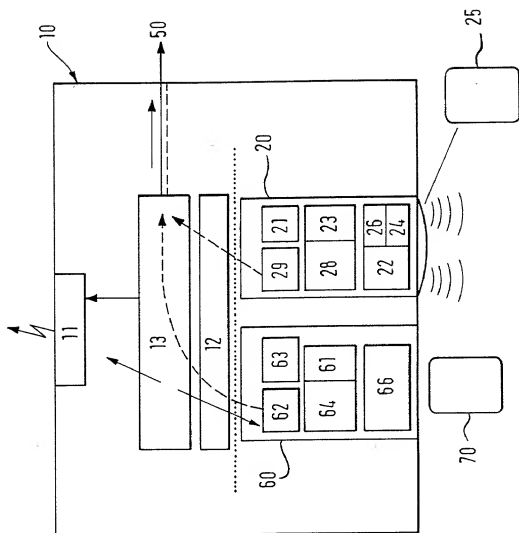


Fig. 2



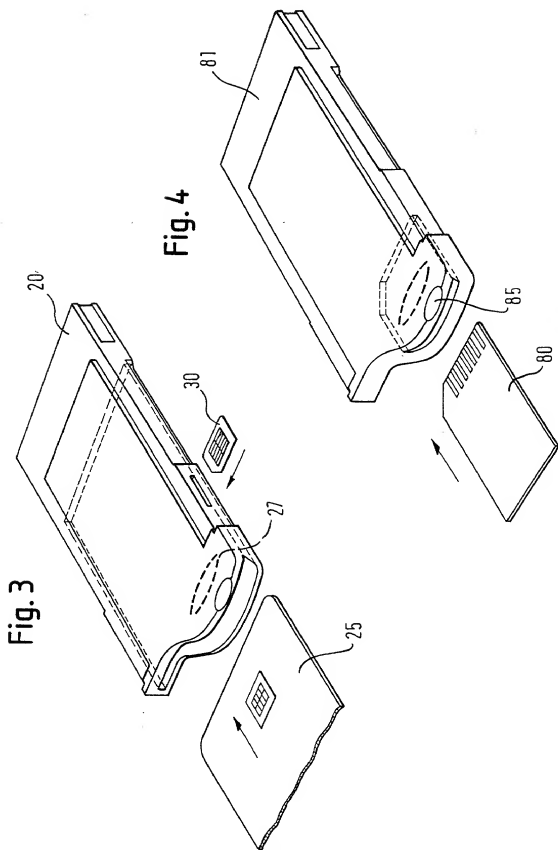
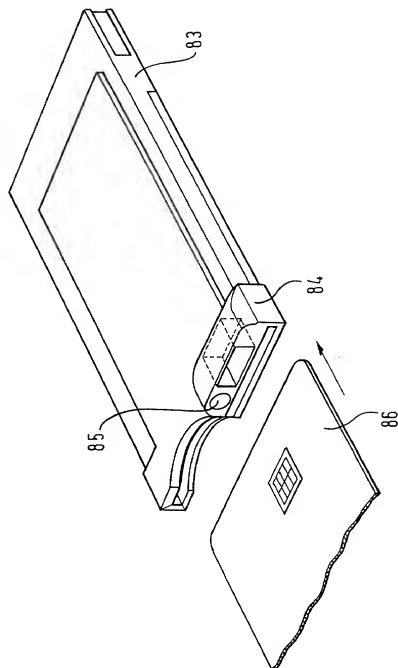


Fig. 5



PATENT APPLICATION DECLARATION

(Attorney's Docket No.:)

1-00
I, Wolfgang NEIFER, declare as follows:

1. My residence, post office address and country of citizenship given below are true and correct.

2. I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought in the attached patent application entitled "Multimedia System, Portable Operating Device and Communication Module for Use in Said System", and I have reviewed and understand the contents of the specification, including its claims.

3. I acknowledge my duty to disclose to the Office all information known to me to be material to patentability of this application, in accordance with 37 C.F.R. Section 1.56, which is defined on the attached page.

4. Priority of foreign application no. 298 02 270.2, filed 10 February 1998 in Germany, is hereby claimed for this application.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Additionally, the undersigned hereby appoints the practitioners of Majestic, Parsons, Siebert & Hsue P.C. who are associated with the Customer Number provided below to prosecute this patent application, to transact all business in the U.S. Patent and Trademark Office connected therewith, to

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